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SUNKEN TREASURES ILLUMINATE THE PAST

Aqua-Lung diver exhales into an ancient wine jar to float it to the surface of the Aegean Sea. For the story of the world's oldest known shipwreck, see page 54.

UMI

The opera house has abstract sculpture in its courtyard and hyenas prowling around it by night.

It is not easy for Ethiopia to catch up with time, for it is an isolated land, the Tibet of Africa. Desert fringes the heart of the country. From it rises, almost perpendicularly, a mile-high plateau. On this giant mountain-fortress live the Ethiopians, not only cut off from the outside, but cut off from each other by ravines, rivers—none navigable for any distance—and higher mountains.

Including Eritrea, a strip of land along the Red Sea federated with Ethiopia, the country is bigger than Texas and New Mexico combined. No census taker has ever entered its round houses, but the government estimated in 1958 that between 18,000,000 and 20,000,000 people live here.

Most are farmers. Although the country lies wholly in the tropics, the high plateau insures pleasant temperatures. A mosaic of fields, below, basks in the sun south of Addis Ababa. The soil is very fertile, and a great variety of crops—corn, wheat, barley, cotton, sugar cane, millet, a little rice, tobacco, fruits, and vegetables—are grown. Ethiopia is the original home of coffee. The word itself comes from

LOWRY AERIAL PHOTO SERVICE

UMI

NATIONAL GEOGRAPHIC PHOTOGRAPHER W. D. VAUGHN. COVER, JOHN COCHRAN

ETHIOPIA—Africa's Ageless Empire

NEAR THE CENTER of Addis Ababa, the modern parliament building stands against hills green with eucalyptus trees. Ethiopians, clad in the togalike national costume, idle near by.

A paved street climbs the hill in the background. But it is more apt to be cluttered with donkeys and mules than with cars. The horn of a Detroit-made sedan honks at gray-haired villagers. Unaccustomed to city ways, they trudge along the avenue to market, spindly-shanked calves over their shoulders.

Addis Ababa is the capital of a 3,000-year-old kingdom where even the wheel was practically unknown until this century. The emperor, 68-year-old Haile Selassie, shown at right playing with his flower-loving pet lion, claims descent from King Solomon and the Queen of Sheba.

His capital, like his country, wears the decor of many centuries. Shops of corrugated iron squat near concrete office buildings. Modern mansions share cool hillsides with thatched huts.

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tance from Biblical times to the present, but inter-village travel remains difficult. The tax collector wings between cities by Ethiopian Airlines, but from the airstrip he rides a mule—if he can get one. Otherwise he walks the dusty trails from village to village.

The back country is as savage as any on earth. Elephants, rhinos, lions, leopards, and giraffes roam freely.

City-dwellers wear European dress; the visitor to Addis Ababa who packs no evening clothes will be uncomfortable in a social whirl as formal as that of Rome or Washington.

But many Ethiopians still wear the traditional *shamma*, a white rectangular shawl. Men wear it over white jodphurs; women, over full ankle-length skirts, often of beautifully colored fabric. Many people now wear sandals. Others still go barefoot.

NATIONAL GEOGRAPHIC PHOTOGRAPHER W. D. VAUGHN

Many races, religions, and languages live in Ethiopia; Amharas are the ruling group. They are descendants of Semitic tribes from southern Arabia who moved into the Ethiopian highlands before the birth of Christ, and intermarried with Hamites who earlier had displaced a Negro group.

The mixture produced the Ethiopians, a word derived from Greek meaning land of the "burned-face men."

The official language is Amharic, a tongue distantly related to both Arabic and Hebrew. It has its own script and an alphabet with 210 letters.

Christianity became Ethiopia's official religion in the 4th century when St. Frumentius converted the royal family. Ethiopian Christianity is the Coptic Christian Church, independent, but related to the Eastern Orthodox Church from which the Copts broke in 451. The group above worships in Holy Trinity Cathedral, Addis Ababa.

The emperor wants for his country the advances of the mechanized West. He sends children to new schools, he imports foreign technicians and advisors to develop his country, and he sends students abroad to learn the ways of the outside world. A modern sugar refinery has been built, and workmen are now raising a new power plant for the capital. New mills are replacing village homes as producers of cotton cloth.

L.B.

UMI

the Ethiopian province of Kaffa where the tree grows in abundance.

Ethiopian rural life has changed little since Biblical days. With a tree branch for a plow, the man at left works his hilly, stony field with typical humpbacked oxen for power. When the crop is in, the beasts will plod around a circle to thresh the grain.

An Ethiopian judges wealth by the number of animals a man owns, is often reluctant to sell them. Nearly everyone owns a few sheep and goats. There are as many cows as people. The herd below kicks up dust southeast of Addis Ababa.

Because the Ethiopian is isolated, he must be self-sufficient. He grows his own food and eats the milk, butter, and raw meat of the cow. By donkey caravan comes his only import—salt from the desert.

His house, called a *tukul,* is round with a cone-shaped roof to withstand wind and rain. Country churches are often built the same way. The walls are made of tree trunks and branches plastered together with mud. The roof is thatch. A low door provides the only opening. The hearth is a hole in the ground or a small mound of earth.

Few roads and railways connect towns. The airplane lifts people part of the dis-

NATIONAL GEOGRAPHIC PHOTOGRAPHER W. D. VAUGHN. ABOVE, FREDERICK J. SIMOONS

it in an exclusive article in the May 1960 *National Geographic*.

One oxhide, encrusted with sea plants and animals, measured 24 inches high (right) and weighed 48 pounds. It was smelted on Cyprus before written history began.

Although the most spectacular recent find, the Bronze Age ship is but one of a continuing series of contributions to knowledge made by the relatively new science of underwater archeology.

In ceremonial wells in Mexico, in sunken Caribbean pirate lairs, off the *Bounty* mutineers' Pitcairn Island, the scholars of the Aqua-Lung have been at work.

Nowhere does the field look so rich as in the eastern Mediterranean. Here fragments of the great Greek, Macedonian, and Roman civilizations lie on the bottom.

Mr. Throckmorton, for example, has found near the site of the fabled Halicarnassus a veritable graveyard of old ships. Merchantmen sailing from Rhodes, Cyprus, Rome, and other Mediterranean trade centers, swarmed this island-dotted coast in ancient times. A sharp, hidden reef off Yassı Island claimed many of them. More than 15 wrecks, many filled with ancient amphorae, or wine jugs (see cover), lie near the reef. Wrecks from 200 to 2,000 years old have already been charted.

PETER THROCKMORTON, ABOVE, JOHN COCHRAN

These coasts have long been the hunting grounds of sponge divers such as the one at left. He has laid aside his net bag of sponges to examine the graceful neck of a Roman amphora plucked from a jungle of broken pottery. With other Turkish and Greek sponge divers, his memory holds a vast store of information on other wreck locations still awaiting the inspection of science. F.S.

•See, in the *National Geographic:* "Exploring the Drowned City of Port Royal," February 1960 ($1); "Dzibilchaltun: Up from the Well of Time," January 1959 ($1); "I Found the Bones of the *Bounty*," December 1957 ($1), all by Luis Marden. See also "Fish Men Discover a 2,200-year-old Greek Ship," by Capt. Jacques-Yves Cousteau, January 1954 ($1).

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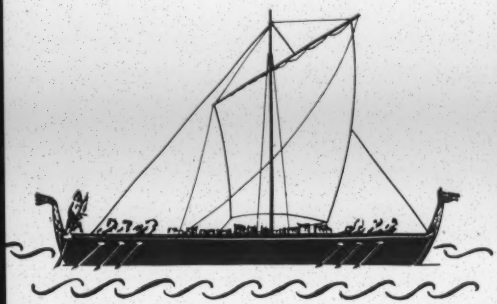
Mediterranean Yields Secrets of the Bronze Age

Modern odyssey discovers ship that sailed in Homer's day



PETER THROCKMORTON

THIRTY-THREE CENTURIES ago the great ship left port. Her single, square sail pulled her along, helped by the strong backs of oarsmen who stroked to the rhythm of songs that were already old but would achieve immortality in the hands of the poet Homer.

On the blue Mediterranean under the warm sun of what we now call Turkey, the freighter was carrying a load of tools: picks, chisels, axes, spear points. These were bronze, for the men of the eastern Mediterranean did not yet know the use of iron.

Also aboard was a supply of money—perhaps the first money man had invented that could be divided at will. Heavy bronze, shaped like an oxhide, each ingot represented the value of an ox or cow. If a trader wished to buy something worth half an ox, he could break the ingot in two—much easier and cheaper than breaking an ox in two.

Perhaps a storm blew up, perhaps the steersman dozed over his long oar; we do not know. But the ship ripped its ribs on a jumble of sharp rock and went under. We have no traces of the brawny oarsmen, but we have found the remains of ship and cargo—the world's oldest known shipwreck.

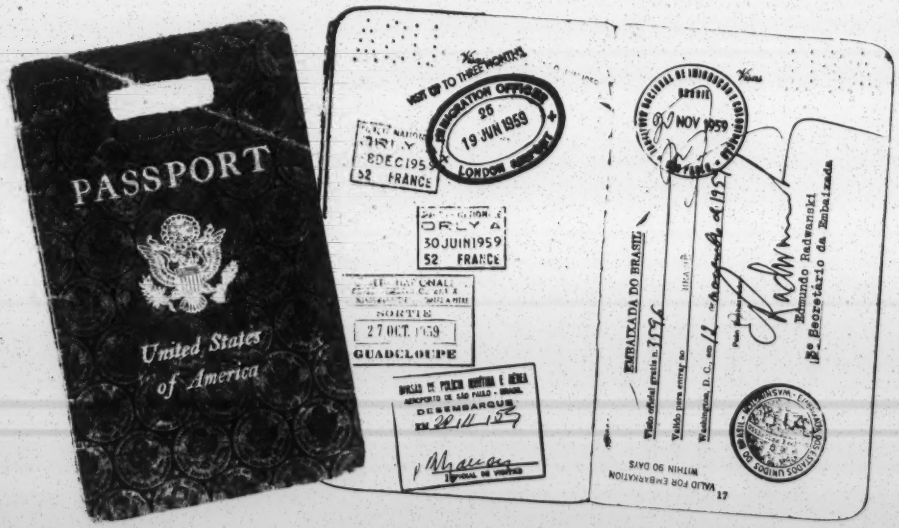
Credit for this discovery belongs to Peter Throckmorton, a young American who found the wreck during a summer's exploration with Turkish sponge fishermen. He returned with friends to start two seasons of diving to bring the treasure to the surface (above). Shoreside scientists have placed the ship in the late Bronze Age, about 1400 B.C. Throckmorton describes the find and the work of raising

Except during the Civil War, the United States never required its citizens going abroad to carry passports until World War I. Americans could get passports, but few bothered. They just got on ships and sailed. Until World War I, most passports were issued to diplomats. One of the oldest on file was carried by John Jay when he left for England in 1794 to negotiate the Jay Treaty.

With World War I came an intense interest in national security. American citizens abroad were required to carry passports. Now only one is spared: the President of the United States. But members of his family who accompanied Dwight Eisenhower on trips abroad recently had to fill out the forms like any other citizen.

Passports are issued for three years and may be renewed for another two years. When the five years are up, one applies for a new passport.

In 1932 only 153,218 passports were issued. But after World War II, Americans



swarmed abroad. Jet planes now put Europe only a few hours away, and more people are traveling faster and farther. In the fiscal year that ended June 30, the State Department sent out a record 830,000 passports.

This flood of applications has caused the Passport Office to streamline operations and cut down on red tape. Applicants need no longer have a witness to their identity. New machines help process applications. It used to take five or six weeks to get a passport; now, only a few days.

Today many countries are once again doing away with passports, at least under certain conditions. Citizens of Denmark, Sweden, Norway, Finland, and Iceland travel freely to one another's countries. Belgium, the Netherlands, and Luxembourg have a similar system. So have the traditional enemies France and Germany, as well as Greece and Turkey. Americans need only proof of citizenship to enter many Latin American countries. They need no passport to cross the United States-Canada border.

Gradually the world seems to be moving again toward the ideal envisioned by the late British Foreign Secretary Ernest Bevin who looked toward the day when he could "go down to Victoria Station, get a railway ticket and go where I like without a passport or anything."

L. B.

UMI

Passport – International I.D. Card

FIRST BAFFLED, then amused, the Austrian customs official below smiles as he examines the "passport" of Heidi Kruse – a flaxen-haired doll.

As she packed for a European trip with her parents, 10-year-old Nora Berko worried about the tourist status of Heidi, her constant companion. So Nora made her doll a passport. Although it lacks the official seals and signatures of a bona fide document, it carries the head-on "photograph of bearer," just like the real one, signed in Nora's childish hand, and plenty of blank pages for the border guards to affix their stamps.

PIX

For as Nora knows, Americans abroad must carry passports. A passport is an official document certifying that the holder is a citizen of a particular country. It requests safe passage and all lawful aid and protection for him while he travels outside his own nation. In the United States, passports are issued by the Department of State.

Below is shown the well-stamped passport of a far-roving *National Geographic* photographer, Thomas J. Abercrombie. The page at far right bears the stamps he collected on one recent assignment: illustrating "Brasília, Metropolis Made to Order" in the May 1960 *National Geographic*.

Some nations – both the United States and Russia among them – require visas of foreigners who seek to enter. These are certificates of approval given the traveler by the country he seeks to visit. If a nation wants to refuse a person entry, it withholds his visa.

The principle of passports is about as old as travel. The prophet Nehemiah recalled that he asked Persian King Artaxerxes for "letters . . . to the governors beyond the river, that they may convey me over till I come to Judah" (Nehemiah 2:7). Roman messengers carried special papers that entitled them to government horses, traveling facilities, and protection.

In general, passports were not compulsory until the 16th century. Then a system was designed mainly to deter vagrants who had become a menace to travel. Some states also wanted to keep citizens from escaping military service.

Nineteenth century thought nurtured the principle that the state should not hinder freedom of travel. By the beginning of World War I, almost all countries had abolished the compulsory passport.

up rain, allowing the water to run off slowly, avoiding flood, drought, and erosion.

As a crop, trees have some distinct advantages. They need not be harvested at a given time; the grower can wait for a favorable market. Often, trees thrive on land unsuited to other crops. A farmer can work his wood lot in slack seasons.

There are disadvantages, too. Fire in a wheat field destroys a year's crop;

W. ROBERT MOORE, NATIONAL GEOGRAPHIC STAFF

Breeding Super-Forests for Tomorrow

To develop superior stock for tree farms such as the one at left in Alabama, foresters breed trees just as other researchers hybridize corn. The man below is not hunting squirrels but shooting twigs off a fast-growing loblolly pine. The twigs will be grafted to rootstocks. When the grafted trees flower, they will be dusted with pollen from other top-grade trees to produce high quality seed. Near Lake City, Florida, United States Forest Service technicians test turpentine yield of slash pines for cross-breeding (lower left).

NATIONAL GEOGRAPHIC PHOTOGRAPHERS THOMAS NEBBIA AND JOSEPH BAYLOR ROBERTS, BELOW LEFT

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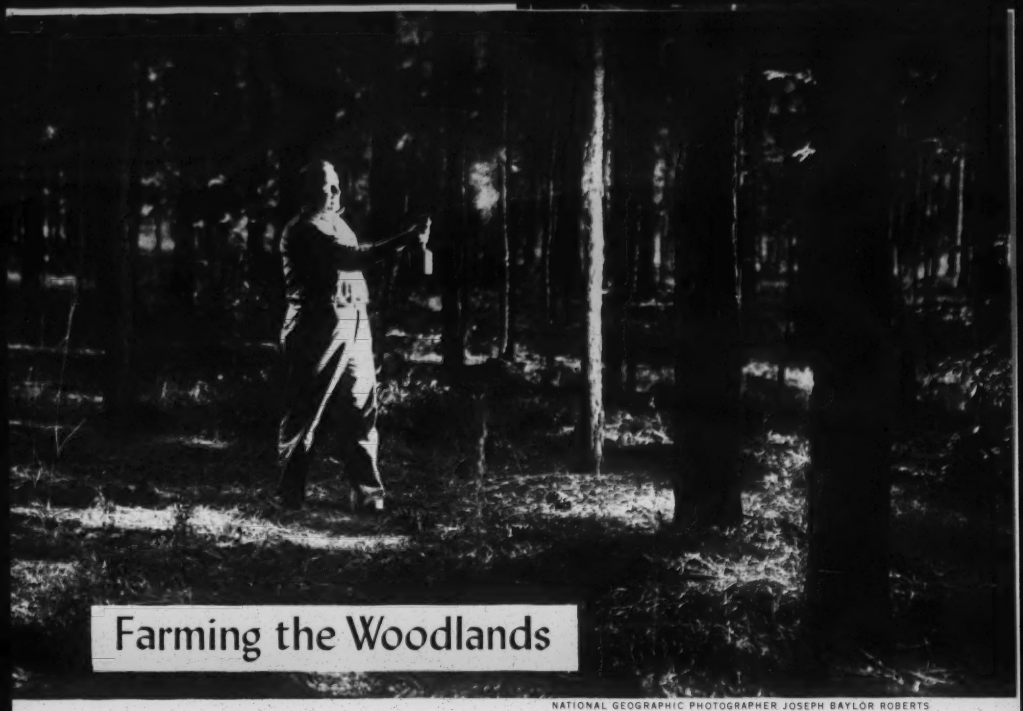

Farming the Woodlands

NATIONAL GEOGRAPHIC PHOTOGRAPHER JOSEPH BAYLOR ROBERTS

AMERICA'S GREEN MANTLE of forest, shredded by a growing nation hungry for raw materials, is spreading once again.

More wood is being grown than cut. Last year more than 2 billion trees were planted. Trees have become a farm crop like cotton or corn, and the same type of agricultural science that increased the yields of the fields is at work in the forest.

Both large and small woods are receiving the benefit of such techniques as selective cutting. The forester above marks a financially mature pine in the Southern Railway's demonstration forest in South Carolina. Instead of cutting down all the woods to harvest the marketable timber, smaller trees are left to grow into next year's—and next decade's—crop.

The small wood lot owner (who controls 60 per cent of the United States wood resources) is likewise becoming more and more aware of the possibilities of well-managed forests.

One clue is the growth of the Tree Farm System, a private program to encourage good forestry. It is sponsored by American Forest Products Industries Inc., an association of wood users, which offers professional advice and arranges technical assistance to wood lot owners.

The number of acres in the program has grown swiftly since it began in 1941. It is now over 54 million. Moreover, Tree Farm officials estimate an equal amount of well-handled forest has not been registered with them.

The soil bank program—government payments to farmers who retire land from crops—helps multiply wood lots.

Even a few acres of woods can give a steady income. Careful thinning produces poles, pulpwood, and firewood from trees that would be poor for lumber, and affords the best trees a better chance to grow. In the early stages of new evergreen stands, Christmas trees are harvested.

By-products from tree farms include turpentine, maple syrup, ferns, herbs, and medicinal plants.

Tree farming offers other benefits. Game thrives, providing sport and food. Most large tree farms are open to the public for camping, hiking, hunting, or fishing.

Soil is conserved. Wooded lands soak

WESTERN WAYS

forest fires obliterate the growth of decades. A maturing forest will provide a steady income, but a new plantation takes years to come into production. Some families set out acres of seedlings when a child is born, to provide a college education.

To be registered as a Tree Farm, the acreage must be private, tax-paying land, with protection against fire and insect attack. It must be managed with repeated crops as the goal.

One method of doing this is shown above. In the St. Helens Tree Farm of the Weyerhaeuser Timber Company, sections of Douglas fir are cut, leaving mature stands to reseed the harvested areas.

Tree Farms range in size from three-acre tracts in the Dakotas to a Florida giant of over a million acres. Forty-seven States—all the conterminous States except Kansas—are represented in the program. F.S.

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